Natural Gas Market Prices
Monthly Update

June 2, 2003

NATURAL GAS MARKET PRICE SPIKE UPDATE

Summary

On March 13, 2003, Governor Davis asked the California Energy Commission (Energy Commission) and the California Public Utilities Commission (CPUC) to review the unexpectedly rapid rise in natural gas market prices that occurred in late February 2003. He also asked that the two Commissions issue a report to his office and provide a monthly update of any additional findings. This report provides an update for June 2003.

Since the first report was issued on March 28, 2003, the Energy Commission and CPUC have examined additional information on market conditions during February and March 2003, the California utilities' behavior during this period, and have discussed these findings with the Federal Energy Regulatory Commission (FERC) staff. This monthly update strengthens the original conclusions. In summary, the Energy Commission and CPUC staff found that:

1. The market price spike was temporary and driven primarily by U.S. weather.
2. The market price spike heightened lingering concerns surrounding natural gas supply, demand, and market issues for California.
3. The impact on California ratepayers was mitigated by utility actions.
4. The FERC staff conducted an initial investigation and concurred with the first California report.
5. The FERC staff is continuing to examine circumstances surrounding natural gas market trading activity.

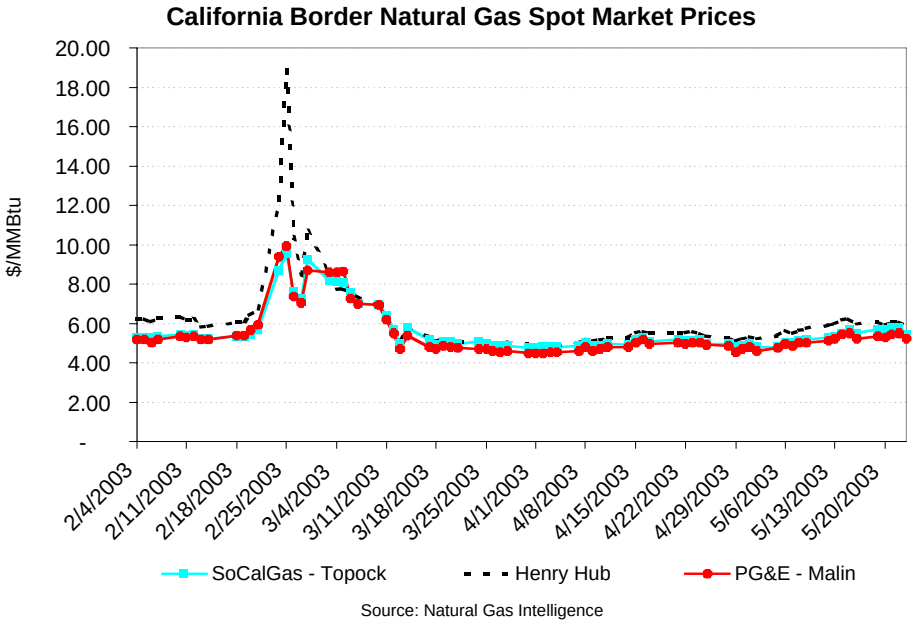
This report also updates the state's hydro situation, since it significantly affects the demand for natural gas in power plants. Fortunately, the state received considerable rain and snow during April and May. As of mid-May, the Energy Commission staff now expects to have approximately 108 percent of normal hydroelectric generation from California facilities. This is a significant increase from the 78 percent of normal expected just two months ago. The Pacific Northwest (PNW) hydro situation has also improved. Water runoff volume now stands at 83 percent of the normal long term average, which should yield over 85 percent of normal for hydrogenation. The increase in hydrogeneration in both areas will ease the demand on natural gas for power generation and help allow more natural gas to be purchased at lower market prices for storage in California.

The following sections provide more detail on these highlights.

Market Price Behavior

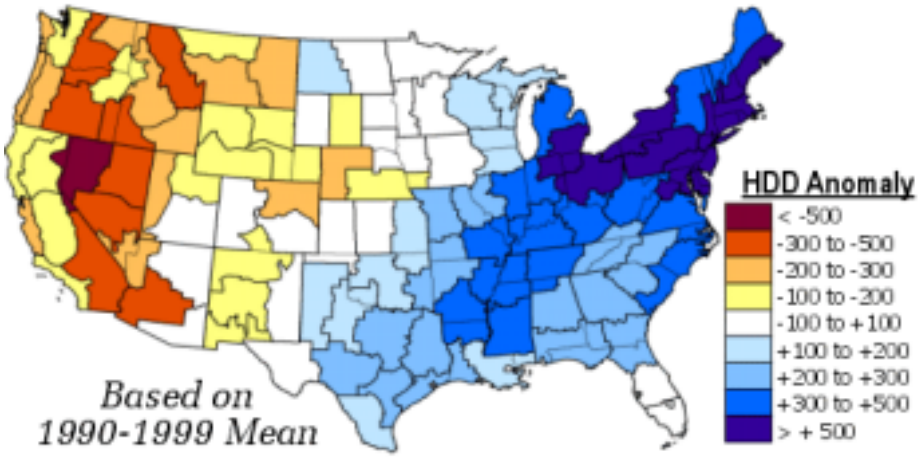
These reports compare the natural gas spot market prices at the California border to the national benchmark prices at Henry Hub. Figure 1 below shows natural gas prices during February and March 2003 when they spiked and through May 20, 2003. As Figure 1 demonstrates, market prices have declined to levels below the February 2003 price spike. More importantly, they have been stable compared to earlier trading behavior, although these market prices are slowing increasing.

Figure 1



The initial report, *Natural Gas Market Prices*, March 28, 2003, identified weather-driven demand for heating as the primary cause of the increase in spot market prices. Figure 2 below confirms this by showing the need for heating as compared to a 10-year average. The Heating Degree Days (HDD) represented in the chart is a cumulative total of the number of days time the difference from each day's normal temperature that triggers either heating or cooling. For example, if the normal temperature is considered 78 degrees and the temperature is actually 88 degrees on two days, that would result in 20 HDD (10 degrees times 2 days). While spring weather in California has been mild (rain, but not severe cold), the East Coast and Midwest still experienced cold temperatures in limited areas, with many states in these two regions experiencing one of the coldest winters on record during 2002/2003.

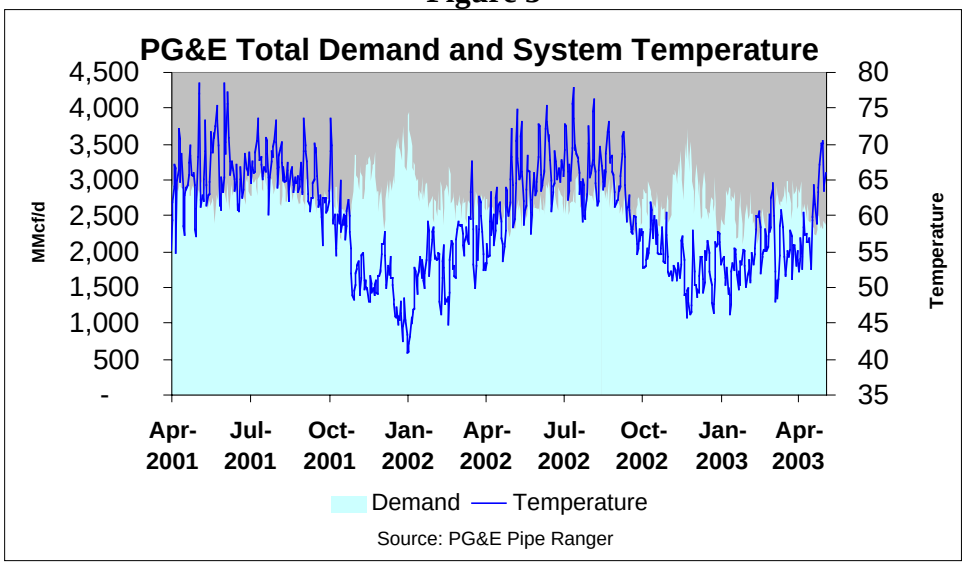
Figure 2
Departure From Normal – Heating Degree Days (HDD)
For the period November 1, 2002 through March 31, 2003



Source: National Oceanic and Atmospheric Administration (NOAA), U.S. Weather Bureau

Figure 3 also demonstrates California's mild temperatures this winter and plots recently available data comparing average temperatures in the PG&E service territory with total system demand for natural gas in the PG&E service territory. Temperatures were moderate, in the 50's and 60's, thus triggering little heating demand. As Figure 3 shows, California did not contribute to the demand/supply squeeze that lead to higher market prices. The data show a similar picture for the SoCalGas and SDG&E service territories.

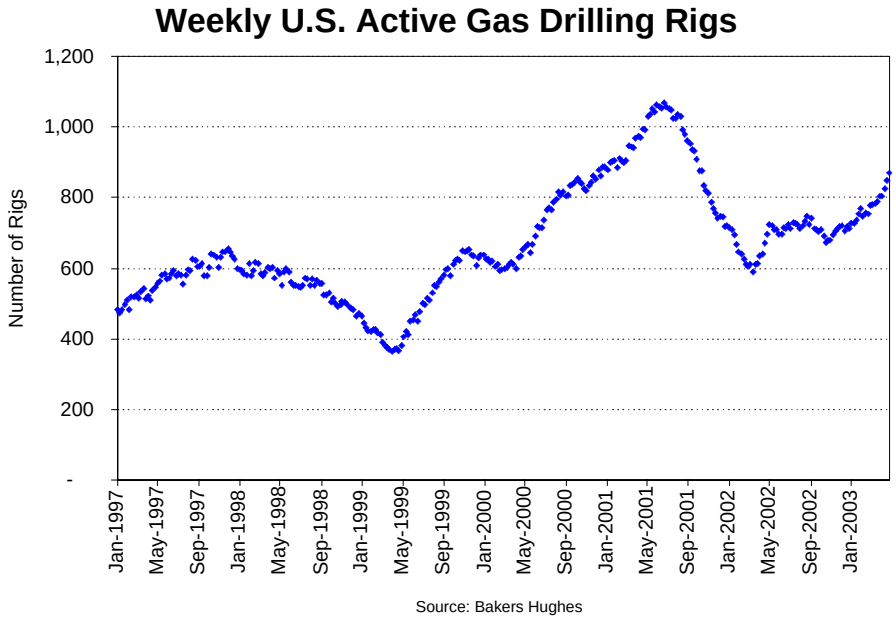
Figure 3



Lingering Natural Gas Issues

The recent market price spike has heightened the concerns of the Energy Commission and CPUC staff over lingering issues that will continue to affect California in the short-term. First, many economists assume that rising natural gas prices will induce higher levels of natural gas drilling activity, which will lead to additional supplies of natural gas in the coming months. As Figure 4 below indicates, the number of active drill rigs has increased some in the recent months and only significantly in the past few weeks, but still not to the extent normally expected. This issue affects total natural gas supply in the U.S. At this point, California experts can only observe and comment on this issue.

Figure 4



Second, as a consequence of higher natural gas market prices, holders of natural gas storage have depleted their inventories, withdrawing the maximum amount of gas from storage facilities to meet demand. Figure 5 below shows the extent that national inventories were used and the very low level of current inventories. Figure 6 provides similar information for California.

Figure 5

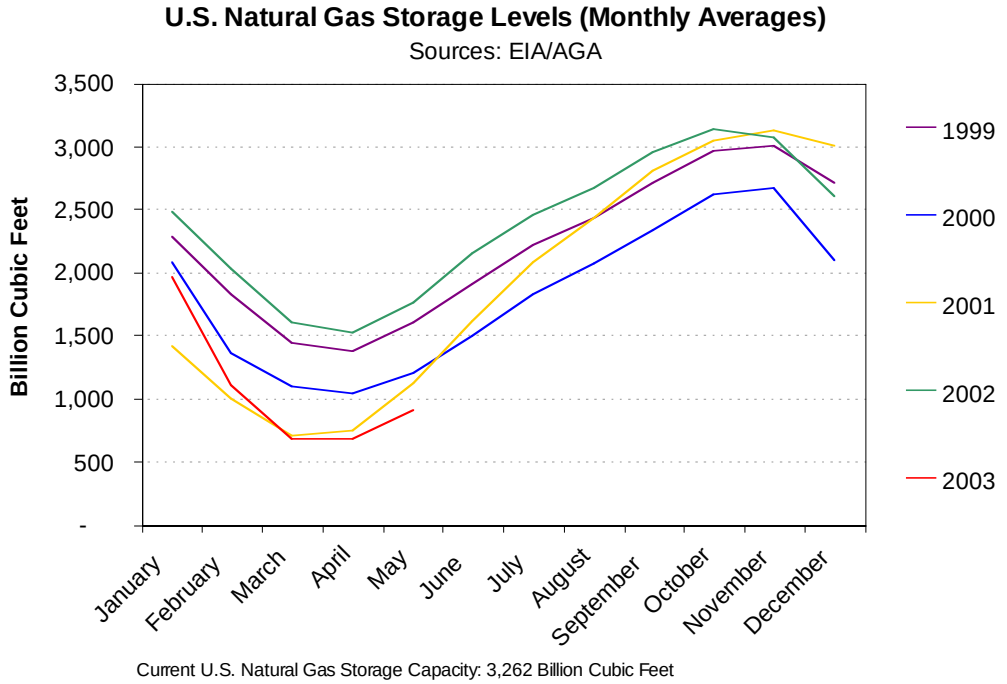
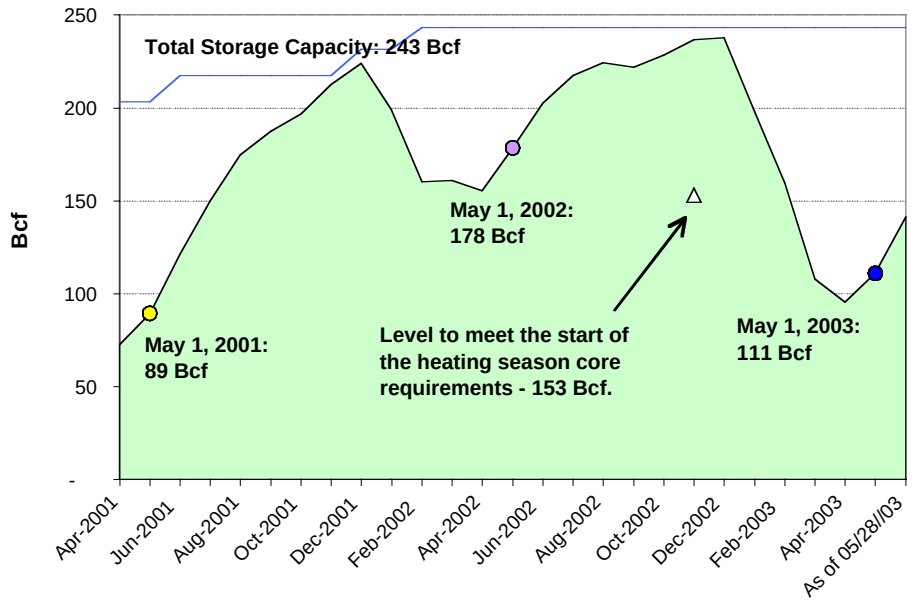


Figure 6

California Natural Gas Utility Storage Level

Beginning of the month, Energy Commission estimate

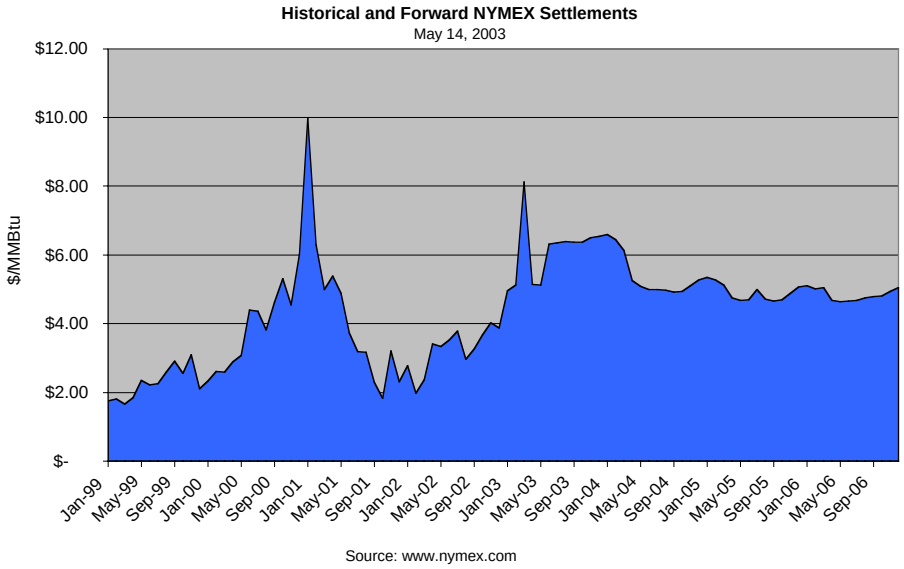


The striking differences between the U.S. and California storage are the injection rates and the relative level of inventories. National storage levels have reached very low levels while California storage is only slightly below average. California utilities and storage facility customers have been injecting natural gas since the April 1, the start of storage injection season, while their U.S. counterparts did not start significant injections until May. The lack of early U.S. injection is particularly worrisome because little surplus natural gas may be available this summer to inject into storage if the power plants that use natural gas as fuel are called upon to meet a hot summer peak electrical demand. The rapid growth in gas-fired electricity generation facilities has changed the character of annual natural gas demand so that two peaks now exist, a traditional peak in the winter for heating demand and a slightly lesser peak in the summer for electricity demand. Since natural gas is a national market, a future demand/supply imbalance in the East Coast will again affect prices throughout the nation, including California. The Energy Commission and CPUC track this issue closely and will alert the Governor's Office if any issues arise that could restrict the natural gas utilities and other holders of gas storage in the ability to meet their goal to inject a reasonable amount of gas.

This issue has become so worrisome that U.S. Secretary of Energy Spencer Abraham has asked an advisory group from the National Petroleum Council to convene a special meeting this month to discuss the U.S. natural gas storage issue. Further, thirty U.S. senators signed a letter to Secretary Abraham applauding him for this action and requesting that he also consider energy efficiency measures as well. The letter specifically references the successful energy efficiency measures in California that helped reduce electricity consumption during and after the 2001 electricity crisis. These efforts reinforce the balanced approach advocated by the Energy Commission and the CPUC.

Third, future market prices are not currently significantly different between this summer and next winter, as shown in Figure 7. The narrow future market price spread has a direct impact on the storage issue raised above.

Figure 7



Many thermal power plant operators who buy natural gas as fuel also store gas, which is financially advantageous to the operator when the market prices are lower during the low-demand periods than the market prices expected during the higher-demand periods. However, the potential savings achieved by purchasing natural gas in advance needs to be greater than the costs of storing the natural gas and tying up the capital for several months. Normally, the forward market prices reflect a significant difference that motivates this class of buyers to make this purchase and physically store gas to meet their future needs.

As Figure 7 shows, the bids for future delivery of natural gas for June 2003 through May 2004 show little difference, with only a small hump in this high plateau. Normally, there are sharper differences between the future prices during different seasons, with winter normally the highest, summer almost as high, and spring and fall normally low. The current futures situation does not create enough financial savings for buyers to actually purchase and store gas now for future use. This could lead to California's natural gas storage facilities not being fully utilized. While this decision may be a financially sound from thermal power plant operator's perspective, it harms California's interests because the state needs to maximize the physical storage of natural gas to help mitigate the effects of future market price spikes. In short, this represents a collision between private business' financial interests and the collective consumers' public interests. We are working with the various parties to gather further information on current practices.

Ratepayer Impacts

In their initial assessment, the Energy Commission and CPUC staff reported that California core consumers were partially insulated from the market price spike impacts due to the purchasing behavior of the regulated natural gas utilities. As further evidence of this finding, the Energy

Commission and CPUC staff examined the daily purchases and flows of the gas utilities during this past two years. As Figure 8 below indicates, PG&E sharply cut back its purchases of natural gas from out-of-state sources to minimize the amount of natural gas bought at the higher spot market prices.

Figure 8

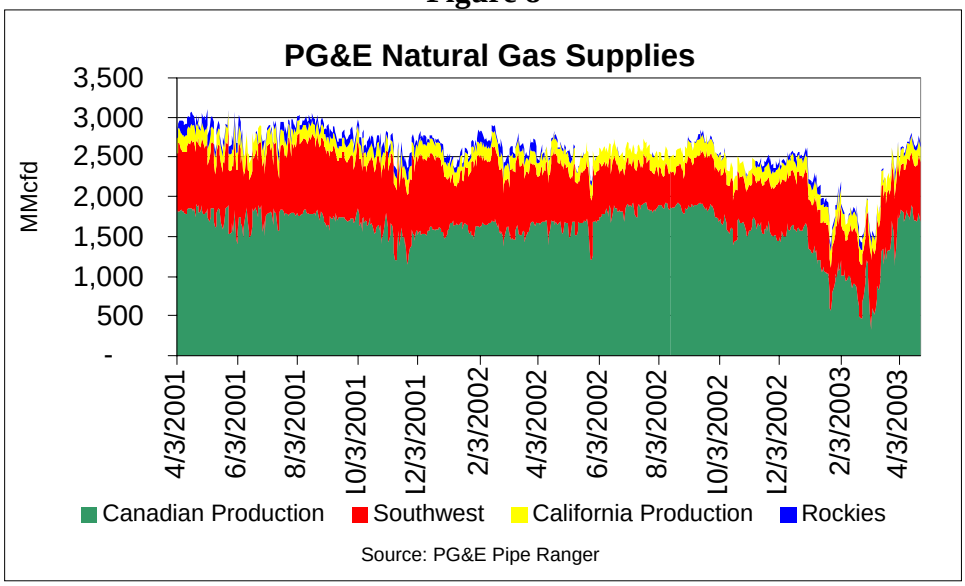
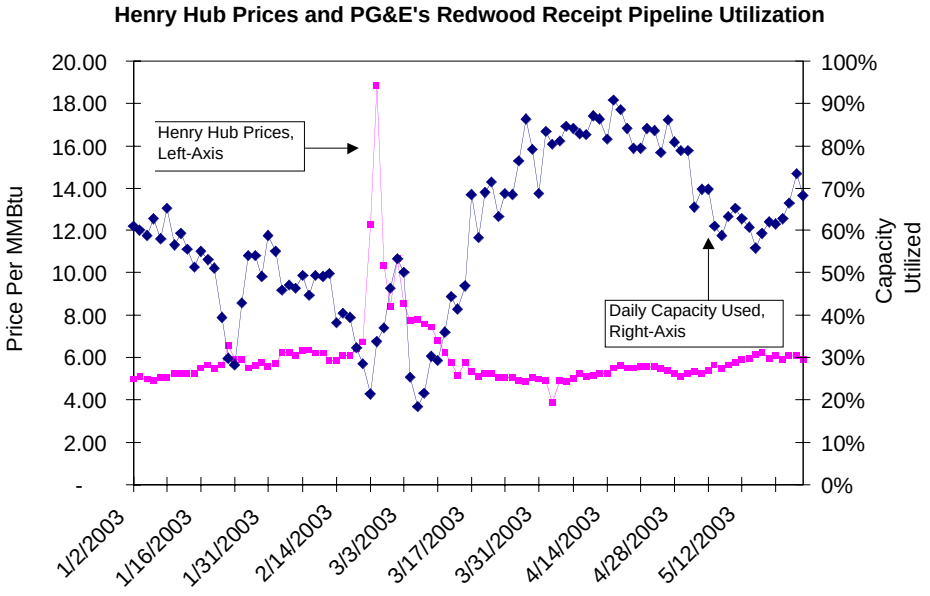


Figure 9 shows the flows on PG&E's pipeline system from the north and the price at Henry Hub. The dramatic changes in daily flows helped insulate PG&E customers from the higher prices. PG&E reduced flows, and purchases of Canadian gas, as the market prices spiked, then resume purchases as market prices dropped.

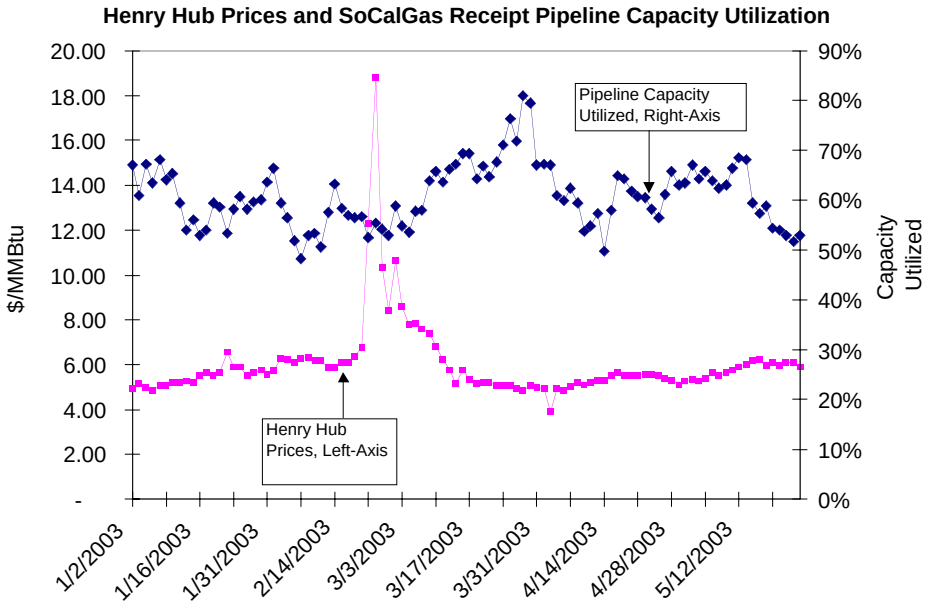
Figure 9
Henry Hub Prices and N. CA. Redwood Pipeline Capacity Utilization



Sources: Henry Hub Prices as reported by *Natural Gas Intelligence*, Redwood Pipeline activity as reported by Pipe Ranger of PG&E

Flows along the El Paso pipeline at the Southern California border did not change as dramatically, as shown in Figure 10. At this time, the Energy Commission and CPUC staff do not have information to indicate whether this gas was purchased under longer term contracts or on spot purchases. The Energy Commission and CPUC staff will continue to review this data, work with PG&E and SoCalgas to gather further details, and provide additional information in a future update.

Figure 10
Henry Hub Prices and S. CA. El Paso Pipeline Capacity Utilization

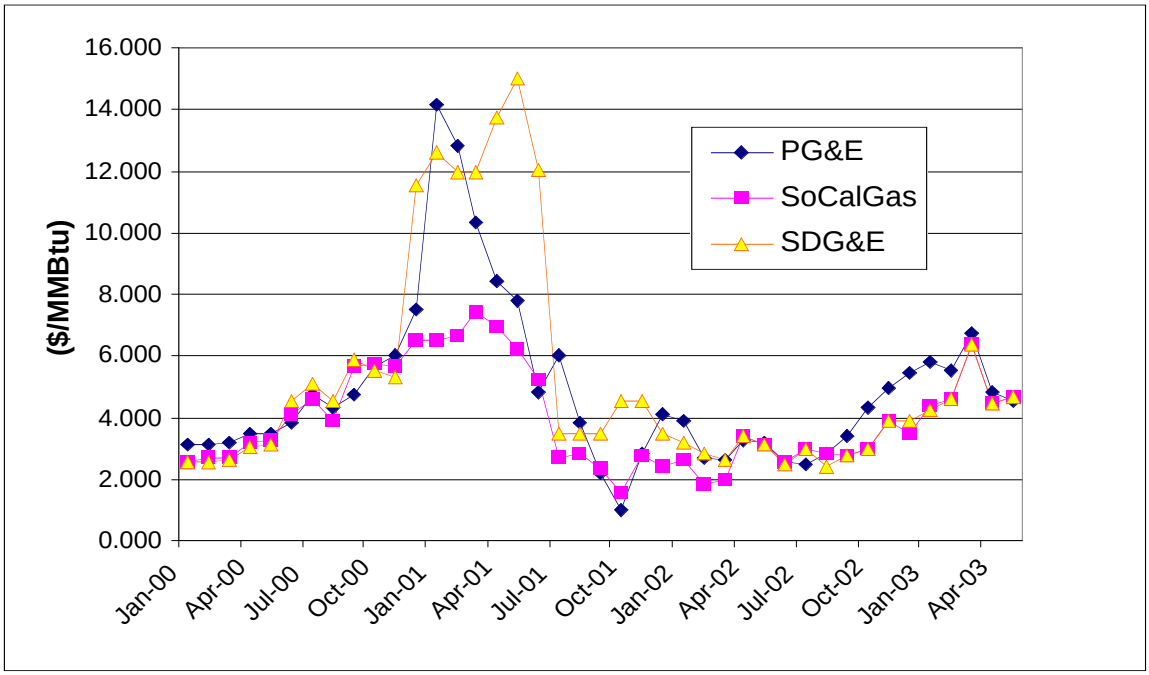


Sources: Henry Hub Prices as reported by *Natural Gas Intelligence*, El Paso Pipeline activity as reported by SoCalGas 'Envoy'

California Utility Natural Gas Procurement Rates Decreased by about 30% in April 2003 compared to March

Reflecting the decrease in the market price of natural gas in recent weeks, the average natural gas procurement costs for the three largest natural gas utilities in the state dropped by about 30% in April 2003 compared to the previous month, March 2003. These utilities are Pacific Gas and Electric Company, Southern California Gas Company, and San Diego Gas & Electric Company. Figure 11 below reflects the changes in the procurement rates over recent years.

Figure 11
California Monthly Utility Procurement Rates



Federal Energy Regulatory Commission Investigations

The Energy Commission and CPUC staff shared the initial market price spike report with the FERC staff after it was completed. The FERC staff is also conducting an investigation into the market price spike. Lisa Carter, the Director of the Division of Integrated Market Assessment, Office of Market Oversight and Investigations at FERC reported on their work at the Western Interstate Energy Board meeting on April 23, 2003. The FERC staff commended California's investigation and referred the audience to the California Energy Commission and CPUC report as an excellent model of an in-depth review of market conditions. They initially concluded the following:

- Market fundamentals explain much of the spot market price behavior.
- Market trading "panic" appeared to take place.
- High market prices and low storage inventories signal overall supply concerns.
- Current gas production may be inadequate to meet annual demand.
- Market impediments may prevent sufficient gas injection into storage facilities.
- Storage levels need to be closely monitored.
- FERC staff is conducting a study of trading behavior during February and March 2003.

The California agency staff will continue to work with FERC staff on market issues affecting California's consumers and will report back when more information is publicly available.